## AMENDMENTS TO THE CLAIMS

1 – 27. (Cancelled).

28. (Currently amended) A system comprising a macroscale device which is interfaced with a microfluidic device using double-sided tape to form a stable association between the microfluidic device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microfluidic device, wherein the microfluidic device has three or more interdigitating microchannels suitable for containing a fluid stream, wherein each of the ~~microfluidic device comprises a~~ microchannels ~~having~~ have a length and/or width that varies to provide a time delay in delivering a separate aqueous stream; and at least one sensor chamber containing at least one sensor, and wherein each microchannel comprises an outlet for delivering the separate aqueous stream into the sensor chamber, wherein the outlets of the microchannels intersect with at least one of the sensor chambers.

29. (Currently amended) A system comprising a macroscale device which is interfaced with a microfluidic device using transfer tape to form a stable association between the microfluidic device having a plurality of microchannels comprising a fluid stream, and the macroscale device, wherein the transfer tape comprises a backing to which an adhesive surface is separably attached and wherein a bond between the adhesive and the backing is weaker than a bond between the adhesive and the macroscale or microfluidic surface, wherein the microfluidic device has three or more interdigitating microchannels suitable for containing a fluid stream, wherein each of the ~~microfluidic device comprises a~~ microchannels ~~having~~ have a length and/or width that varies to provide a time delay in delivering a separate aqueous stream; and wherein the microfluidic device has at least one sensor chamber containing at least one sensor, and wherein each microchannel comprises an outlet for delivering the separate aqueous stream into the sensor chamber, and wherein the outlets of the microchannels intersect with at least one of the sensor chambers.

30 – 34. (Cancelled)

35. (Previously presented) The system according to claim 28 or 29, wherein the microchannels connect to reservoirs in the microfluidic device and wherein the center-to-center distance of each reservoir corresponds to the center-to-center distance of wells in the microtiter plate.

36. (Cancelled)

37. (Previously Presented) The system according to claim 28 or 29, wherein the at least one sensor chamber is for containing one or more cells.

38. (Previously presented) The system according to any one of claims 28, 29, 48 or 49, wherein microfluidic device comprises at least one electrical element for performing planar patch clamp analysis.

39. (Cancelled)

40. (Previously Presented) The system according to any one of claims 28, 29, 48 or 49, wherein the macroscale device comprises a pump head connectable to a pressurized air supply.

41. (Previously Presented) The system according to any one of claims 28, 29, 48 or 49, wherein the macroscale surface interfaced with a microfluidic surface is a surface of a device selected from the group consisting of a pump head, pump, degasser, flow meter, injector manifold, a pressure sensor; flow cell; concentration manifold or cartridges; a fitting or connector, a mixer, a compressor, an ultrasonic bed, an extractor, a focusing device, a dialysis chamber, an absorption chamber, a metabolite chamber, a toxicity chamber, a cell chamber, a detector, an RFID tag, a reagent vessel, a separation column, a focusing column, a size exclusion column, an ion-exchange columns; affinity columns; solid-phase extraction beds; a filter; a sieve; a frit; a depth filter, a heater, a heat

exchanger, a cooler; a magnetic field generator; electric field generator; electroporation device, patch clamp pipette, and one or more connections thereto.

42. (Original) The system according to claim 41, wherein the detector is selected from the group consisting of a UV/Visible absorbance flow cell, a fluorescence flow cell, a conductivity flow cell, an electrochemical detector, a plasma detector, surface plasmon resonance detector and a mass spectrometry detector,

43. (Original) The system according to claim 41, wherein the detector is a sensor selected from the group consisting of a flow meter, a pressure transducer, a temperature sensor, a chemical sensor, an acoustic sensor, a color sensor, an optical sensor, a bar code sensor, a photothermal sensor, a photoacoustic sensor, and an RFID tag.

44. (Cancelled)

45. (Previously presented) The system according to claim 28 or claim 48 wherein the adhesives on each side of the double sided tape comprise different types of adhesive.

46. (Previously Presented) The system according to any one of claims 28, 29, 48 or 49, wherein the adhesive on the tape is patterned onto a backing.

47. (Previously Presented) The system according to any one of claims 28, 29, 48 or 49, wherein at least one surface of the tape comprises portions that are coated with adhesive and portions that are not coated with adhesive.

48. (Currently Amended) A system comprising a macroscale device which is interfaced with a microfluidic device using double-sided tape to form a stable association between the microfluidic device and the macroscale device, and wherein the double sided tape comprises a backing with a first side which associates with the macroscale device and second side which associates with the

microfluidic device having three or more interdigitating microchannels suitable for containing a fluid stream, wherein each of the ~~microfluidic device comprises a~~ microchannels ~~having~~ have a length and/or width that varies to provide a time delay in delivering a separate aqueous stream; each side coated at least partially with an adhesive, wherein the microfluidic device has at least one sensor chamber containing at least one sensor, and wherein each microchannel comprises an outlet for delivering the separate aqueous stream into the sensor chamber, and wherein the outlets of the microchannels intersect with at least one of the sensor chambers.

49. (Currently amended) A system comprising a macroscale device which is interfaced with a microfluidic device using transfer tape to form a stable association between the microfluidic device having three or more microchannels, and the macroscale device, and wherein a bond between the adhesive and backing is weaker than a bond between the adhesive and macroscale device or microfluidic device, wherein the microfluidic device has three or more interdigitating microchannels suitable for containing a fluid stream, wherein each of the ~~microfluidic device comprises a~~ microchannels ~~having~~ have a length and/or width that varies to provide a time delay in delivering a separate aqueous stream; and at least one sensor chamber containing at least one sensor, and wherein each microchannel comprises an outlet for delivering the separate aqueous stream into the sensor chamber, and wherein the outlets of the microchannels intersect with at least one of the sensor chambers.

50. (Cancelled)

51. (Previously Presented) The system according to any one of claims 28, 29, 48 or 49, wherein said system comprises a pressure chamber between the macroscale device and the microfluidic device.

52 – 53. (Cancelled)

54. (Previously presented) The system according to any one of claims 28, 29, 48 or 49, wherein the sensor is a cell based biosensor.

55. (Previously Presented) The system of claim 54, wherein the cell-based biosensor is a receptor.

56. (Previously presented) The system according to any one of claims 28, 29, 48 or 49, wherein the system comprises three or more delivery channels delivering one or more of a sample, an agonist, an antagonist.

57. (Currently amended) A system comprising a macroscale device which is interfaced with a microfluidic device using double-sided tape to form a stable association between the microfluidic device and the macroscale device, wherein the double sided tape comprises a first adhesive surface which associates with the macroscale device and a second adhesive surface which associates with the microfluidic device, wherein the microfluidic device has at least three interdigitating microchannels suitable for containing a fluid stream, wherein each of the ~~microfluidic device comprises a~~ microchannels ~~having~~ have a length and/or width that varies to provide a time delay in delivering a separate aqueous stream; and at least three sensor chambers each containing at least one sensor, and wherein each microchannel comprises an outlet for delivering the separate aqueous stream into the sensor chamber, and wherein the outlets of the microchannels intersect with at least one of the sensor chambers, and wherein the microchannels correspond in number to the number of wells in a microtiter plate.

58. (Previously presented) The system of any one of claims 28, 29, 48 or 49, wherein the microchannels correspond in number to the number of wells in a microtiter plate.

59. (Previously presented) The system of any one of claims 28, 29, 48 or 49, comprising a gas/fluid interface, wherein the macroscale device contains gas and the microfluidic device contains fluid.